

MILWAUKEE COUNTY EMS



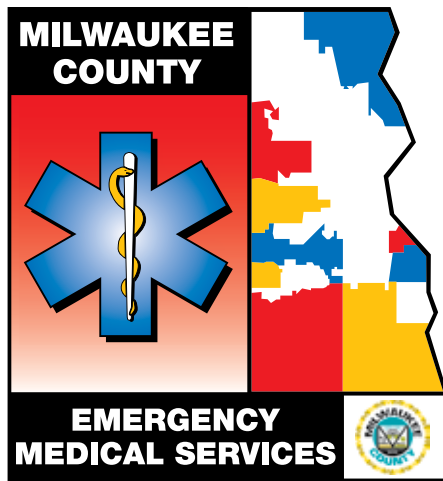
ANNUAL REPORT

2007



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OVERVIEW

The Milwaukee County Emergency Medical Services system is a countywide system covering 241 square miles and serving approximately 1 million people. It includes 19 separate municipalities that each provide their own BLS services (private and/or fire service), while paramedic services are provided by 19 dedicated ALS and 7 flexible ALS/BLS fire service ambulances and multiple paramedic first-response units. Depending on the community, paramedic ambulances are staffed with either 3 paramedics, 2 paramedics and an EMT-D driver, or 2 paramedics. In 2007, the paramedic system evaluated 30,641 patients; of these 21,268 were transported by paramedics, with 1,468 of these requiring direct physician consultation. Thirty-seven active fire department rescue squads (BLS) and 56 engine companies function as first responder units in Milwaukee County.

Initial access to the system occurs via several enhanced 911 call-taking centers where dispatchers are able to see the phone number and address of the location from where the call is placed. For 911 calls from cellular phones, Milwaukee County Sheriff's Department dispatchers route the call to the dispatch center of the municipality where the caller is located. The appropriate EMS units are dispatched in a tiered response according to protocol. An automatic defibrillator-equipped Basic Life Support unit (either a fire department rescue squad, fire truck, or private BLS ambulance) is sent as a first responder on every call and responds on average in 4 minutes.

When a paramedic unit (MED Unit) responds to a call, it is assigned to a radio frequency by a communicator at Milwaukee County EMS Communications (EMS COM). When necessary, a MED Unit will request a physician in EMS COM for assistance and additional orders.

The physician medical directors of the Milwaukee County EMS system provide medical oversight for all Milwaukee County EMS system plan participants. This includes developing policy and procedure for all aspects of out-of-hospital care including appropriate dispatch, communications, medical treatment and destination. A Medical Director is available 24-hours-a-day to provide real-time consultation to any Milwaukee County EMS provider.



Mission Statement: *The mission of Milwaukee County EMS is to provide performance excellence in pre-hospital care through education, communications, operations, health information and quality management, and scientific discovery.*

ADMINISTRATION

The administration of MC EMS manages the coordination of the day-to-day operations and strategic planning for the short term and long term future. Managers in the education, health information, quality assurance, communications and equipment/supply sections of MC EMS report to and collaborate with the program director to meet the mission and visions of the division.

Donations by stake holders / partners and grants



Wisconsin Hospital Association (WHA) donation of funds for Rosetta ECG transmitting devices.

The WHA donated \$29,500 towards the purchase of Rosetta ECG transmission devices. Thirty devices were purchased with the funds. These devices allow the physicians acting as medical control for the paramedics to receive patient care data in a real-time manner and to work with the EMS crews to provide time sensitive cardiac care.



Columbia/St. Mary's donation for UHF radios

Columbia/St. Mary's Foundation funded a \$20,000 project that purchased UHF radios and cabling that will allow the paramedics to transmit ECG data via radio waves to the EMS Communications center. The UHF radios are used in conjunction with the Rosetta devices. In addition, by transmitting 12 Lead ECG data to the EMS Communications Center, the staff are able to fax the 12 Lead ECG data to the hospital who will be receiving the patient. This process saves countless minutes that are critical in saving heart muscle when a patient is having a heart attack.



General Federation of Women's Clubs (GFWC) donation of pediatric supply bags

The GFWC purchased pediatric equipment supply bags for each of the municipal fire department paramedic transport vehicles. The GFWC hosted several fund raising events and several of the members came to the offices of Milwaukee County EMS to assist with the setting up of the supply bags. County Executive Scott Walker received the bags on behalf of Milwaukee County EMS and participated in the delivery of the supply bags to the City of Milwaukee Fire Department on October 17, 2007.



Urban Area Security Initiative grant for EZ IO drills

EMS was able to purchase "EZ" intraosseous vascular access drills through a grant from the Urban Area Security Initiative. These drills assist paramedic crews in gaining access to the highly vascular middle of a patient's leg bone. Life saving fluid and medications are administered into the IO vasculature when the patient is in critical condition. The EZ IO drills enable this vascular access with minimal discomfort and better accuracy.



Medical College of Wisconsin *Hometown Heroes* Emergency Medical Services Golf Tournament

The Department of Emergency Medicine at the Medical College of Wisconsin hosted a golf outing to raise funds to support EMS research.

Municipal Contracts

Major changes

Milwaukee County and eight municipalities signed new two year contracts for providing paramedic services to all the municipalities within Milwaukee County. The contracts moved to a market-based model where municipalities bill for the services they provide and retain the revenues from the bills.

Flexibility for municipalities

The contract allowed municipalities greater flexibility on how their paramedic staff were used, the number of paramedic vehicles deployed and more efficient and effective use of services. This flexibility greatly enhanced the availability of advanced life support services throughout the entire county.

Steering Committee

Strategic Planning Process

During discussions between administration and management of EMS it became apparent that there was a need to have an organized platform which would drive future direction for EMS. The decision was made to develop a Steering Committee. This committee would be charged with addressing the development, implementation and management of strategic planning initiatives. The committee is made up of the managers of the Health Information, Communications/equipment, Quality Assurance, Education Center and Medical Direction staff. Additional members are added depending on the initiative.

Organizational Profile

One of the first initiatives undertaken by the steering committee was to create a profile of Emergency Medical Services as an organization. The organizational profile identifies the different sections that make up Milwaukee County EMS, who our customers are, how EMS interacts with our customers and many other items that give MC EMS our identity. The steering committee felt it was very important to create a document that can be used as a foundation on which to base goals and initiatives. This document has been very helpful to EMS stakeholders by explaining the organization of MC EMS and our functions. Copies may be obtained by writing the administrative assistant of MC EMS Janis Spitzer at janis.spitzer@milwcnty.com.

Avian Flu Pandemic Plan

As part of the Department of Health and Human Services (DHHS), MC EMS began the process of developing a business plan in the event of a flu pandemic. This plan will become part of a large DHHS plan on providing EMS services to our customers in the event that our operational staff is affected by the Avian flu. The plan MC EMS is creating will be able to be used in the event of any type of pandemic, man-made or natural disasters that may impact EMS over a long period of time.





QUALITY ASSURANCE

Partnerships with Local Receiving Hospitals

Milwaukee County EMS is represented on local hospitals' Chest Pain, Trauma, and Stroke committees, with the ultimate goal of improved patient care prior to and after arrival in the emergency departments. The committees collaborate to understand the similarities and differences in treatment; coordinate processes and notification; and establish improved feedback mechanisms to communicate system successes, opportunities for improvements, and provide patient outcome information. These partnerships have shown improved door-to-balloon times based on catheterization lab notification for incoming

patient who has ST-segment elevation ECG changes indicating a possible heart attack, stroke team activation based on field reports of possible stroke patients, and trauma team activation based on patient status and mechanism of injury.

RescueNet

ECG uploading and tracking

Technology and software upgrades have made it possible to electronically store and access patients' electrocardiographic information. This is an exciting advancement, as it enables system review for educational and quality assurance purposes. Electronic storage ensures high quality of the ECG tracings and reduces the amount of paper printouts. Patient identifiers allow the ECG to be linked to the patient care record. Research using additional patient assessment and treatment data has resulted in changes in the standard of care for patients with acute cardiac symptoms.

Sentinel Event Review Process

In the event of a mass casualty incident within Milwaukee County, the Milwaukee County EMS Communication Center is the designated agency for gathering and disseminating information to receiving hospitals. The role of the Communications Center is defined by Emergency Management policy (Annex O). On December 6, 2006, an explosion at the Falk Corporation in the City of Milwaukee triggered a mass casualty incident (MCI). Although Annex O was not activated, the Medical Communication Center followed procedures as outlined in Annex O. The explosion resulted in three fatalities and 45 patients transported to local hospitals. At the time of the event, MC EMS had no review process in place to: 1) Identify sentinel events triggering incident review; 2) the review process; 3) the extent of the review; 4) how to report the results of the review.

As a result, a process was developed to identify and establish sentinel events warranting review of an incident. A reporting format to document the background information, scope of the review, findings, and recommendations of the review was also developed. Seven sentinel events were identified and reviewed in 2007.

Cellular 911 Issues

Did you know emergency responders may not be able to determine your location in the event of a 911 call made from your cell phone? Unlike landlines with "Enhanced 911", your call may not be traceable if placed from a cell phone. All cellular 911 calls are routed to the Milwaukee County Sheriff's Department. Once the caller's emergency type and location is determined, the call is forwarded to the appropriate community and provider. Milwaukee County EMS teamed with the Sheriff's Department in a performance improvement initiative to ensure all calls are appropriately turned over to the appropriate agency with the necessary information to respond to the correct location with the correct equipment and correct level of response.

HEALTH INFORMATION MANAGEMENT

The Health Information Management area of Milwaukee County EMS is responsible for the collection, computerization, and management of all patient care information generated by our contracted municipal EMS providers in the Milwaukee County EMS system. The area also ensures compliance with state confidentiality laws and the federal Privacy and Security Rules (HIPAA) governing protected health information.

Patient Care Data Collection Process

Data Collection: Data is collected through a custom-designed patient care record that meets all State and National EMS uniform data collection requirements. The EMS Report form compliments our tiered response model and is standard throughout the system.

Patient Care Database: Our web-based relational database was designed to accommodate the increasing data elements, system connectivity needs, and reporting obligations. The database supports the collection of both the BLS and ALS data elements documented on the patient care record. Its web-based technology supports remote site access to the database via the Internet by all authorized EMS system participants. This provides opportunities to generate reports, run database queries and access record images for viewing or printing.

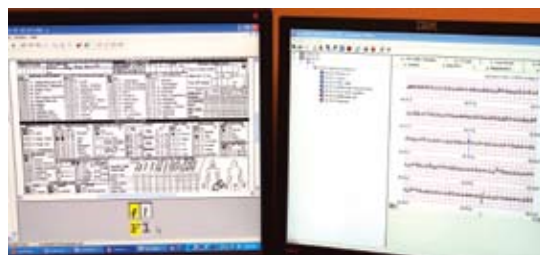
Database Entry: An efficient record scanning process currently facilitates the computerization of the patient care records into the database. In 2008, implementation of an electronic patient care record (ePCR) system by several municipal EMS providers will replace the paper record to achieve a real-time data entry model.

Database Benefits: Milwaukee County EMS centralized data repository is a vital component in managing our reputable EMS system, which was ranked 3rd best in the nation by *USA Today*. It provides the ability to:

- Project relevant budget needs based on current data
- Evaluate inventory and supplies to promote cost containment
- Conduct opportune system performance reviews to assure efficient operation
- Evaluate individual personnel performance benchmarks
- Provide up-to-date statistical reports
- Collect patient outcome information from receiving hospitals, and
- Identify quality improvement elements to promote the continuous high level of quality patient care to the people of Milwaukee County.

Wisconsin Ambulance Run Data System (WARDS)

The state of Wisconsin developed a state-wide database called Wisconsin Ambulance Run Data System requiring patient data submission from all EMS providers. Its purpose is to assist the State in providing supportive information as to the activities of ambulance service providers in the state, such as, support for requests for grants, monitor quality care issues and surveillance monitoring for outbreak and public health concerns. Milwaukee County EMS submits data to WARDS on behalf of any requesting contracted municipal EMS provider.





System Information

County Demographics 951,252 (2007 census)

Statistics –Advanced Life Support (ALS) Units

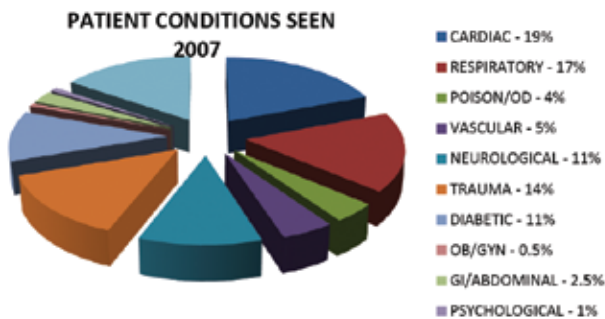
Milwaukee County Cardiac Arrest Survival Rate: 25%

(National average = 5%)

Total Saves 1973 through 2007: 2,520

Total ALS Patients Treated: 30,658

Total ALS Transports: 21,358



ALS Patient Conditions (See graph)

ALS Unit Response data

- 90% Response Times are ≤ 9.0 min.
- Average Response Time = 5.1 min.
- Average Pt. Scene Duration* = 22.3 min.
- Average Transport Time = 10.3 min.

* At scene duties consist of assessing and stabilizing patient before transport to the hospital to prevent further injury.



ALS Patient Demographics

- Male 49 %
- Female 51 %

ETHNIC ORIGIN

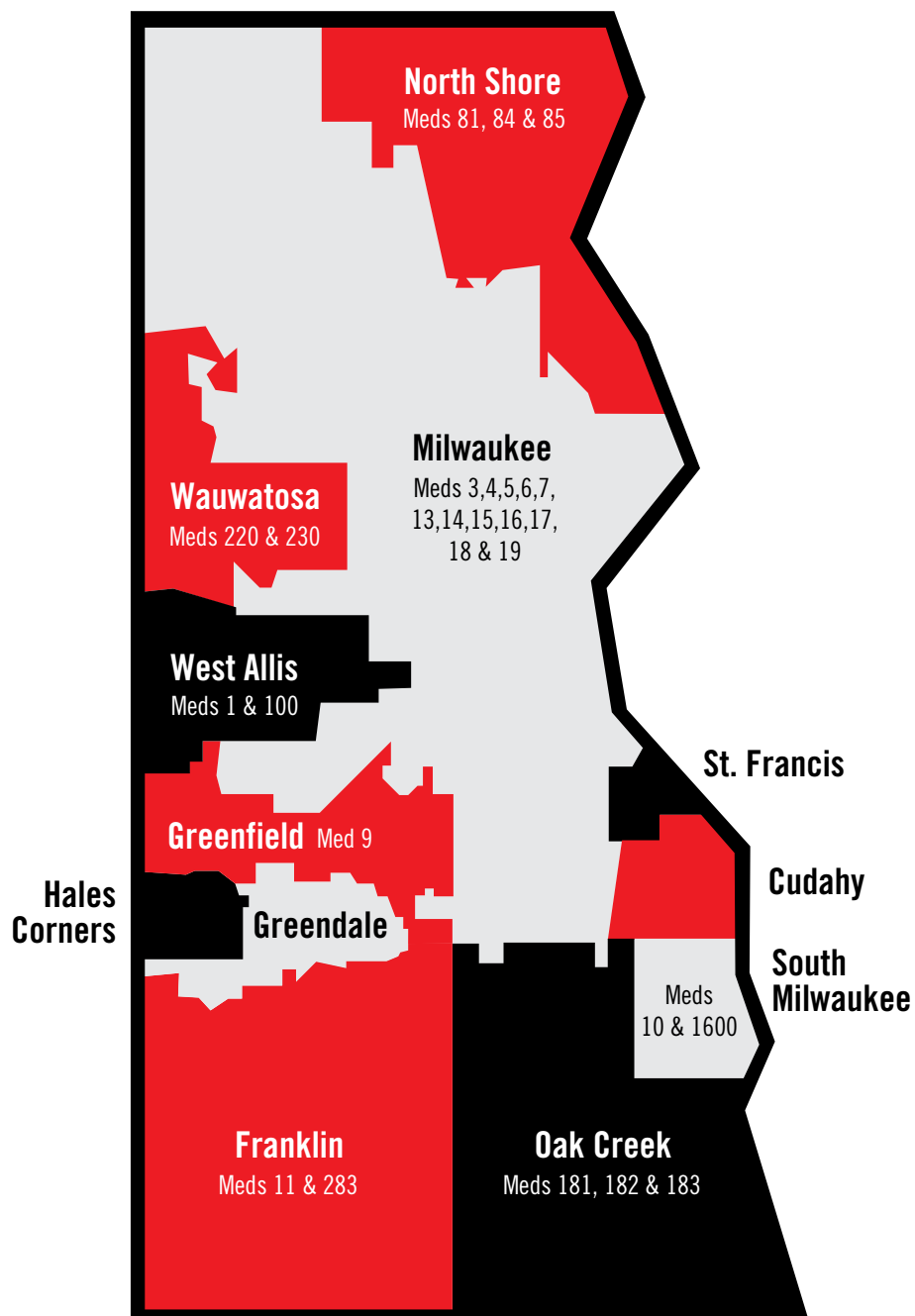
- White 53 %
- African American 36 %
- Hispanic 5 %
- Other 1 %
- Asian 0.8 %
- Native American 0.2 %
- Unknown 4 %

AGES

- ≤ 2 2 %
- 3-7 1 %
- 8-21 8 %
- 22-40 16 %
- 41-59 30 %
- 60-80 27 %
- > 80 15 %
- Unknown <1 %

Paramedic Unit Locations

Several municipalities who MC EMS contracts with to provide paramedic services, added paramedic transport units to their fire departments. As of the end of 2007 there are 27 fire department paramedic transport units within Milwaukee County.





EDUCATION

Web Based Education

MC EMS Education Center continued our distribution of education via an Internet web-based method. This method called Distributive Learning (DL) has become very a successful manner via which to distribute EMS related education. In addition, the DL site has made the distribution of notices, e-mails and the sharing of general information easier and more efficient. This method of communication has become so effective and efficient that other fire-based EMS providers have decided to implement using the same process.



Statistics on Number of Classes Taught and Students Educated

Paramedic refresher classes taught and number of students educated

2007 EMT/Paramedic refresher classes held – 32

EMTP attending refresher classes – 319

New paramedic students educated

26 students enrolled in the EMT/Paramedic course

8 municipalities were represented

Students were the first class to take the new computer adaptive National Registry of EMT written exam. 94.7% passed on their first attempt.



First responder classes for Aquatics

The Milwaukee County EMS Education Center provides First Responder training to lifeguards from the Aquatics department who staff pools and beaches throughout Milwaukee County. The First Responder class is an advanced first aid class that covers a multitude of topics from medical, respiratory, pediatric and elderly emergencies, to trauma and CPR. The class is taught over 44 hours.

2007 1st responder classes offered

4 full classes – 84 students

2 refresher classes – 28 students



American Heart Association classes

2007	CTC Number of Classes	Participants
ACLS Classes	24	281
ACLS Instructor	2	8
BLS Health Care Provider	37	325
Heartsaver AED	29	267
Heartsaver First Aid	5	37
BLS Instructor Classes	2	11
PALS Provider	13	147
PALS Instructor	1 recert	8

EMS COMMUNICATIONS CENTER

Statistics

EMS Communications Center Activity - 2007					
Total Communication Events	56,881				
Total number of time a paramedic unit requested a communication frequency	43,594				
Requests to speak to a medical control physician	1463				
	Med Unit	Fire Dept BLS	Milw Co. Private EMS Provider	Out of County EMS Provider	Totals
Froedtert Memorial Lutheran Hospital					
Ambulance triage pages	1855	903	4301	456	7515
All trauma pages	1814	193	568	391	2966
Total Froedtert pages					10481
Children's Hospital of Wisconsin					
Ambulance triage pages	813	286	2511	469	4079
CHW trauma pages	276	20	153	63	511
Total CHW Pages					4590

Changes in work load, increased data collection points for electronic base activity tracking cards

An increase of municipal ALS and ALS/BLS units created an increase in the communications activities of the EMS Communication Center. In addition, to better monitor the EMS system, the managers of the Milwaukee County EMS system added several new data points to what data was already collected. The collection of these data points both increased the work activity of the center's communication staff and allowed for improved surveillance of the system and for changes to be made to improve the efficiencies of the system.

Improved Reporting Capabilities

The Oracle database which is used to collect data gathered in the EMS Communications Center, was expanded to allow for more complex analysis of the data. The results of the analysis is then shared with the quality assurance, medical control and education sections for action.





OPERATIONS

Bradley Center Activities

The Bradley Center sports complex contracts with Milwaukee County EMS to provide paramedics to staff their first aid room and respond to medical emergencies during the set-up, take-down and event that is hosted at the Bradley Center. Depending on the event between four and six paramedics commonly staff the events.

MONTHLY SUMMARY

Month	Reports Written
January	19
February	20
March	18
April	13
May	11
June	2
July	6
August	10
September	2
October	1
November	14
December	21
Total	137



Transports from Bradley Center

Total ALS Transports	6
Total BLS Transports	17
Total	23



ADVANCING CARE THROUGH MEDICAL SCIENCES RESEARCH

Milwaukee County Emergency Medical Services stands as a national model of an EMS Center of Excellence. Its participation in research further enhances the quality of care delivered, improves outcome for the citizens of Milwaukee, and establishes the standard of medical practice for the nation.

ROC Studies

Milwaukee County Emergency Medical Services (EMS) system has been selected as one of the National Institutes of Health (NIH) ten centers for the Resuscitation Outcomes Consortium (ROC) to study the impact of promising clinical interventions on survival for patients with severe traumatic injury and cardiac arrest. Two ROC studies have been implemented in Milwaukee County EMS. The Hypertonic Saline Trial randomizes patients with severe traumatic or brain injury to receive either the current standard of care (intravenous normal saline fluid) or the current standard of care plus intravenous hypertonic saline fluid. Hypertonic saline rapidly expands volume inside the body's blood vessels and reduces brain swelling. The PRIMED Trial evaluates new methods to improve blood pressure during CPR for patients with cardiac arrest: use of a new, non-invasive device placed on the airway called the Impedance Threshold Device and performing CPR for a longer period of time before attempting defibrillation. The Hypertonic Saline Trial has significant potential to improve survival and quality of life for patients with severe traumatic or brain injury.

IMMEDIATE Trial

Milwaukee County EMS is also investigating ways to limit the size of heart attacks to improve survival and quality of life for patients with a lack of blood supply to the heart. The Immediate Trial is evaluating the benefits of an intravenous infusion of a combination of glucose, insulin, and potassium (GIK) started in the ambulance prior to hospital arrival. Beginning this therapy at the earliest time possible (in the ambulance), holds potential to significantly improve outcome for this patient population.

NETT Network

The National Institutes of Health has also selected Milwaukee County EMS as a center for the Neurological Emergency Treatment Trials (NETT) Network. Although studies have not been selected or begun yet, this consortium will implement promising clinical interventions for patients with neurological emergencies such as stroke, uncontrolled seizures, or meningitis.

Pediatric Emergency Care Applied Research Network (PECARN)

Milwaukee County EMS, in partnership with the Medical College of Wisconsin, has been invited to participate in the Emergency Medical Services section of the PECARN pediatric research consortium. This relationship will lead to EMS research projects designed to improve the quality of EMS care provided to patients.

MEDICAL CONTROL

BLS Medical Oversight

In addition to being medical control for the Advanced Life Support (ALS) fire department-based paramedics, MC EMS entered into agreements with the villages of Greendale and Hales Corners and the city of Franklin to provide medical oversight for their Basic Life Support (BLS) units.

Addition of Assistant Medical Director

MC EMS contracts with the Medical College of Wisconsin for medical oversight for the EMS system and the EMS Education Center. During 2007, the Medical College of Wisconsin added two practicing physicians and one research faculty member to their staff. The addition of the faculty will enhance a comprehensive medical oversight team for the EMS system.

Ronald Pirrallo, MD, MHSA – Director

Jonathan Rubin, MD – Associate Director

Charles Cady, MD – Assistant Director

Jason Liu, MD – Assistant Director

M. Riccardo Colella, DO – Assistant Director

Halim Hennes, MD, MS – Associate Director (Pediatrics)

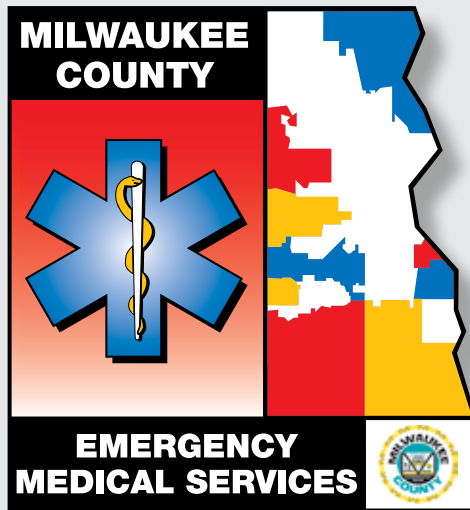
Steven Andrews, MD, EMT-P – FFL Medical Director

E. Brooke Lerner, PhD – EMS Research Director

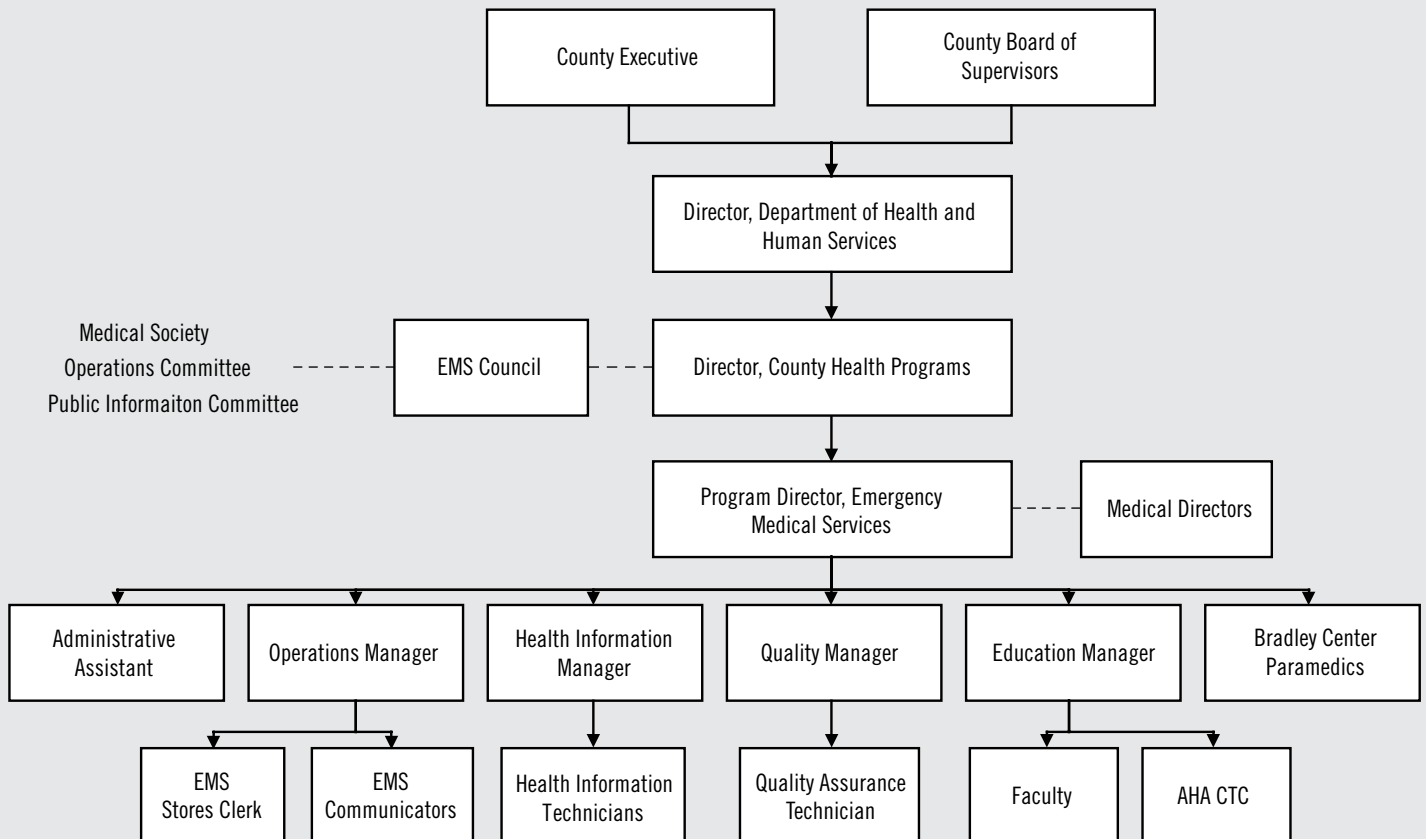
EMS Center of Excellence, International Physician Education

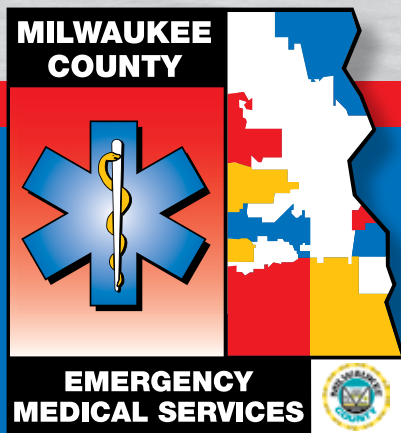
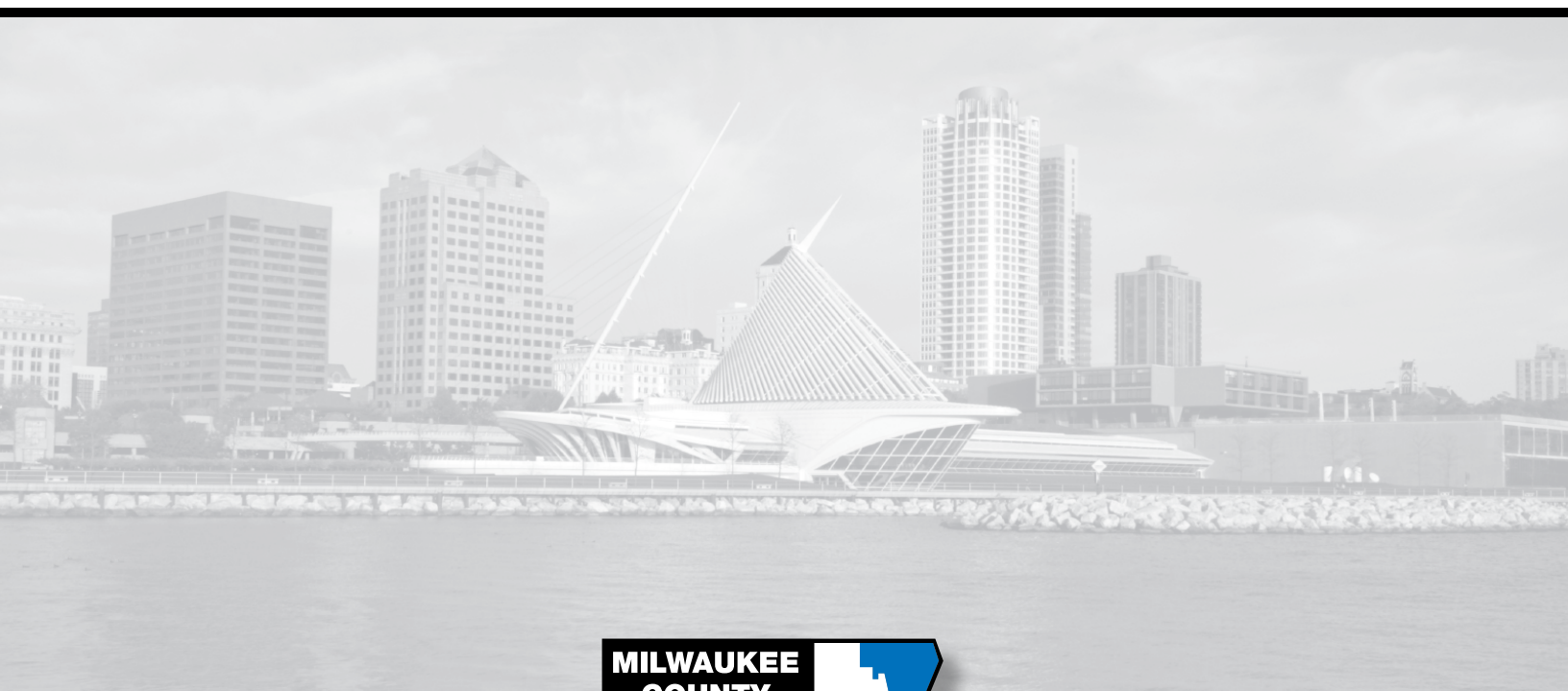
In conjunction with the Center for International Health and the Medical College of Wisconsin Department of Emergency Medicine, Milwaukee County EMS hosted 4 emergency physicians from Shanghai China. The purpose was to immerse these visiting physicians in academic emergency medicine and U.S. healthcare delivery systems with a special emphasis of the role of emergency medicine physician leadership and EMS systems development with the ultimate goal of strengthening Shanghai's EMS system in preparation for the 2010 World Expo.





Milwaukee County Emergency Medical Services Organizational Chart





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